

NONREIMBURSABLE INTERAGENCY AGREEMENT
BETWEEN
THE NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
AND
NAVAL INFORMATION WARFARE CENTER PACIFIC
FOR
NIWC PACIFIC/NASA ROBOTICS TECHNOLOGY INITIATIVE.

ARTICLE 1. AUTHORITY AND PARTIES

The National Aeronautics and Space Administration Ames Research Center, located at Moffett Field, CA 94035 (hereinafter referred to as "NASA" or "NASA ARC") enters into this Interagency Agreement (hereinafter referred to as "IAA") in accordance with 51 U.S.C. § 20113(e). Naval Information Warfare Center Pacific, located at 53560 Hull Street, San Diego, CA 92152-5001 (hereinafter referred to as "NIWC Pacific"), enters into this IAA in accordance with Encouragement of Technology Transfer, 10 U.S.C. § 4832. NASA and NIWC Pacific may be individually referred to as a "Party" and collectively referred to as the "Parties."

ARTICLE 2. PURPOSE

NASA ARC and Naval Information Warfare Center (NIWC) Pacific shall continue the collaborative robotics development and technology transfer initiative for unmanned robots and human-robotic interfaces of mutual interest for the Department of Defense (DoD) and NASA mission applications that was started under the current NRSAA (SAA2-403225), which expired in March 2022. The Autonomous Technologies (AT) Division Unmanned Systems Branches (Codes 56481-4) at NIWC Pacific conduct the research, development, testing and evaluation of ground, air, and water surface robotics for tactical, force protection, homeland security and physical security applications for all DoD military services. The central focus of the Branch mission is to evaluate and mature robotic technologies from the R&D environment (targeting platform autonomy, sensor payloads, and command and control) for near-term field operations. The ARC Intelligent Robotics Group (IRG) conducts research and development to test concepts for future exploration missions (human and robotic, in-space and planetary), including autonomous and semi-autonomous robotic controls, human-robot interaction, and data communications and sensor processing concepts.

Under this IAA, NIWC Pacific and ARC shall collaborate on research to advance robotic technologies including, but not limited to, 1) human-robot interaction methods, processes, research models, and performance metrics; 2) scalability of sensor fusion and autonomy algorithms on robotic platforms of different sizes; 3) mobile robot technology databases; 4) operator interfaces for controlling multiple unmanned systems; 5) intelligent navigation (localization and hazard avoidance) techniques; and 6) multi-sensor perception including visual, non-visual, and acoustic sensors. Overall, this collaboration shall significantly increase both IRG's and the Unmanned Systems Branch's understanding and use of robotics technology in their respective applications and will enhance the Parties' ability to operate and assess human-

robot systems, sensor fusion methods and autonomous robot behaviors.

ARTICLE 3. RESPONSIBILITIES

A. NASA ARC will use reasonable efforts to:

1. Share human-robotic systems experiment designs, test methods and metrics, and lessons learned based on NASA-specific applications and projects.
2. Provide project information and test data for input to human-robotic systems research models and results analysis.
3. Share sensor design configurations, sensor data sets, and sensor fusion methods.
4. Provide access to NASA robotics facilities, rover platforms, sensors, and test equipment in support of (1) – (3) above as needed.
5. Provide personnel support to NIWC Pacific in support of (1) – (3) above as needed.
6. Identify and assess relevant NASA ARC robotic projects for technology transfer to NIWC Pacific and technical collaboration on a regular and on-going basis.
7. Provide, enhance, and customize selected NASA ARC technologies and associated support resources for testing, field evaluation, and joint use under this agreement.
8. Share lessons learned regarding commercial-off-the-shelf (COTS) products (i.e., sensors, robotic vehicles, etc.), technology integration, and performance of other COTS and R&D products to help facilitate more efficient and rapid technology maturation and testing.
9. Share and disclose further developments and improvements made to background technologies of the other Party.

B. NIWC Pacific will use reasonable efforts to:

1. Share human-robot systems experiment designs, test methods and metrics, and lessons learned based on NIWC Pacific-specific applications and projects.
2. Provide project information and test data for input to human-robotic systems research models and results analysis.
3. Share sensor design configurations, sensor data sets, and sensor fusion methods.
4. Provide access to NIWC Pacific robotics facilities, rover platforms, sensors, and test equipment in pursuant of (1) – (3) above as needed.
5. Provide personnel support to NASA ARC in pursuant of (1) – (3) above as needed.
6. Identify and assess relevant NIWC Pacific robotic projects for technology transfer to NASA and technical collaboration on a regular and on-going basis.

7. Provide, enhance, and customize selected NIWC Pacific technologies and associated support resources for testing, field evaluation, and joint use under this agreement.
8. Share lessons learned regarding commercial-off-the-shelf (COTS) products (i.e., sensors, robotic vehicles, etc.), technology integration, and performance of other COTS and R&D products to help facilitate more efficient and rapid technology maturation and testing.
9. Share and disclose further developments and improvements made to background technologies of the other Party.

ARTICLE 4. SCHEDULE AND MILESTONES

The planned major milestones for the activities defined in the "Responsibilities" Article are as follows:

Activity	Estimated Completion Date
Share human-robotic systems experiment designs, test methods, metrics, sensor design configurations, sensor data sets, and sensor fusion methods and lessons learned based on specific applications and projects and provide project information and test data for input to human-robotic systems research models and results analysis (NASA & NIWC)	July 2022
Review current approaches in command and control, mission planning, and concept of operations with multiple robotic assets, distributed networks, and distributed operator control (NASA and NIWC)	Nov 2023
Assess current efforts in advanced user interface design and human robot interaction, focusing on research results and lessons learned (NASA and NIWC)	Nov 2024
Review approaches to integration, test methods, and V&V tools for fielding robotic systems (NASA and NIWC)	May 2025
Review developments in enhanced navigation, manipulation, and other payloads for complex robot operations (NASA and NIWC)	Nov 2025
Assess current developments, research results and lessons learned in payload and autonomous robotic behaviors (NASA and NIWC)	May 2026
Assess approaches and applications of progressive levels of robot autonomy and their effects on concept of operations (NASA and NIWC)	Nov 2026
Review future focus areas of robotic research, applications, and Programs, including areas of strengths and gaps at each agency (NASA and NIWC)	June 2027

ARTICLE 5. FINANCIAL OBLIGATIONS

There will be no transfer of funds between the Parties under this Agreement and each Party will

fund its own participation. All activities under or pursuant to this Agreement are subject to the availability of funds, and no provision of this Agreement shall be interpreted to require obligation or payment of funds in violation of the Anti-Deficiency Act (31 U.S.C. § 1341).

ARTICLE 6. PRIORITY OF USE

Any schedule or milestone in this IAA is estimated based upon the Parties' current understanding of the projected availability of its respective goods, services, facilities, or equipment. In the event that either Party's projected availability changes, NASA or NIWC Pacific, respectively, shall be given reasonable notice of that change, so that the schedule and milestones may be adjusted accordingly. The Parties agree that NASA's and NIWC Pacific's use of its own goods, services, facilities, or equipment shall have priority over the use planned in this IAA.

ARTICLE 7. LIABILITY AND RISK OF LOSS

Each Party agrees to assume liability for its own risks arising from or related to activities conducted under this IAA.

ARTICLE 8. INTELLECTUAL PROPERTY RIGHTS - DATA RIGHTS

NASA and NIWC Pacific agree that the information and data exchanged in furtherance of the activities under this IAA will be exchanged without use and disclosure restrictions unless required by national security regulations (e.g., classified information) or as otherwise provided in this IAA or agreed to by NASA and NIWC Pacific for specifically identified information or data (e.g., information or data specifically marked with a restrictive notice).

ARTICLE 9. INTELLECTUAL PROPERTY RIGHTS - HANDLING OF DATA

A. In the performance of this Agreement, NASA or NIWC Pacific (as "Disclosing Party") may provide the other Party (as "Receiving Party") with: 1. data of third parties that the Disclosing Party has agreed to handle under protective arrangements or is required to protect under the Trade Secrets Act (18 U.S.C. § 1905) ("Third Party Proprietary Data"), or 2. Government data, including software, the use and dissemination of which, the Disclosing Party intends to control ("Controlled Government Data").

B. All Third Party Proprietary Data and Controlled Government Data provided by Disclosing Party to Receiving Party shall be marked by Disclosing Party with a restrictive notice and protected by Receiving Party in accordance with this Article.

C. Disclosing Party provides the following Data to Receiving Party. The lists below may not be comprehensive, are subject to change, and do not supersede any restrictive notice on the Data.

1. Third Party Proprietary Data: The Disclosing Party's Third Party Proprietary Data, if any, will be identified in a separate technical document.
2. Controlled Government Data: The Disclosing Party's Controlled Government Data, if any, will be identified in a separate technical document.

3. NASA software and related Data will be provided to NIWC Pacific under a separate Software Usage Agreement (SUA). NIWC Pacific shall use and protect the related data in accordance with this Article: None

D. For such Data identified with a restrictive notice pursuant to paragraph B of this Article, including Data identified in an accompanying funding document, Receiving Party shall:

1. Use, disclose, or reproduce such Data only as necessary under this Agreement;
2. Safeguard such Data from unauthorized use and disclosure;
3. Allow access to such Data only to its employees and any contractors or subcontractors requiring access under this Agreement;
4. Except as otherwise indicated in D.3., preclude disclosure outside Receiving Party's organization;
5. Notify its employees with access about their obligations under this Article and ensure their compliance, and notify any contractors or subcontractors with access about their obligations under this Article; and
6. Dispose of such Data as Disclosing Party directs.

DI. If the Parties exchange Data having a notice deemed ambiguous or unauthorized by the receiving Party, it should tell the providing Party. If the notice indicates a restriction, the receiving Party must protect the Data under this Article unless otherwise directed in writing by the providing Party.

DII. Notwithstanding any restrictions provided in this Article, the Parties are not restricted in the use, disclosure, or reproduction of Data provided under this Agreement that is:

1. known or available from other sources without restriction;
2. known, possessed, or developed independently, and without reference to the Proprietary Data;
3. made available by the owners to others without restriction; or
4. required by law or court order to be disclosed.

If a Party believes that any exceptions apply, it shall notify the other Party before any unrestricted use, disclosure, or reproduction of the Data.

ARTICLE 10. INTELLECTUAL PROPERTY RIGHTS - INVENTION AND PATENT RIGHTS

Unless otherwise agreed upon by NASA and NIWC Pacific, custody and administration of inventions made (conceived or first actually reduced to practice) under this IAA will remain with the respective inventing Party. In the event an invention is made jointly by employees of the Parties (including by employees of a Party's contractors or subcontractors for which the U.S. Government has ownership), the Parties will consult and agree as to future actions toward establishment of patent protection for the invention.

ARTICLE 11. RELEASE OF GENERAL INFORMATION TO THE PUBLIC AND MEDIA

NASA or NIWC Pacific may, consistent with Federal law and this Agreement, release general information regarding its own participation in this IAA as desired. Insofar as participation of the other Party in this IAA is included in a public release, NASA and NIWC Pacific will seek to consult with each other prior to any such release, consistent with the Parties' respective policies. Pursuant to Section 841(d) of the NASA Transition Authorization Act of 2017, Public Law 115-

10 (the “NTAA”), NASA is obligated to publicly disclose copies of all agreements conducted pursuant to NASA’s 51 U.S.C. §20113(e) authority in a searchable format on the NASA website within 60 days after the agreement is signed by the Parties. The Parties acknowledge that, if this IAA is entered into pursuant to NASA’s 51 U.S.C. §20113(e) authority, this IAA will be disclosed, without redaction, in accordance with the NTAA.

ARTICLE 12. TERM OF AGREEMENT

A. Effective Date: This IAA becomes effective upon the date of the last signature below ("Effective Date") and shall remain in effect until the completion of all obligations of both Parties hereto, or five years from the effective date, whichever comes first.

B. Review of Agreement: This IAA will be reviewed no less often than mid-point on or around the anniversary of its effective date in its entirety.

C. Transferability: This IAA is not transferable except with the written consent of the Parties.

ARTICLE 13. RIGHT TO TERMINATE

Either Party may unilaterally terminate this Agreement by providing thirty (30) calendar days written notice to the other Party.

ARTICLE 14. CONTINUING OBLIGATIONS

The rights and obligations of the Parties that, by their nature, would continue beyond the expiration or termination of this Agreement, e.g., “Liability and Risk of Loss” and “Intellectual Property Rights” and related clauses shall survive such expiration or termination of this Agreement.

ARTICLE 15. POINTS OF CONTACT

The following personnel are designated as the Points of Contact between the Parties in the NASA Ames Research Center performance of this Agreement.

Maria Bualat
Intelligent Robotics Group Lead
Phone: 650-604-4250
maria.bualat@nasa.gov

Tracy Heath Pastore
NIWC Pacific
Phone: 619-553-3789
tracy.h.pastore.civ@us.navy.mil

ARTICLE 16. DISPUTE RESOLUTION

All disputes concerning questions of fact or law arising under this IAA shall be referred by the claimant in writing to the appropriate person identified in this IAA as the “Points of Contact.” The persons identified as the “Points of Contact” for NASA and NIWC Pacific will consult and attempt to resolve all issues arising from the implementation of this IAA. If they are unable to

come to agreement on any issue, the dispute will be referred to the signatories to this IAA, or their designees, for joint resolution after the Parties have separately documented in writing clear reasons for the dispute. As applicable, disputes will be resolved pursuant to The Department of the Treasury's Intragovernmental Transaction Guide (Treasury Financial Manual, Vol. 1, Part 2, Chapter 4700, Appendix 5 (hereinafter, the "Intragovernmental Transaction Guide")).

ARTICLE 17. MODIFICATIONS

Any modification to this IAA shall be executed, in writing, and signed by an authorized representative of NASA and the NIWC Pacific.

ARTICLE 18. APPLICABLE LAW

U.S. Federal law governs this IAA for all purposes, including, but not limited to, determining the validity of the IAA, the meaning of its provisions, and the rights, obligations and remedies of the Parties.

ARTICLE 19. LOAN OF GOVERNMENT PROPERTY

The parties shall enter into a NASA Form 893, Loan of NASA Equipment, for NASA equipment loaned to Partner.

ARTICLE 20. SIGNATORY AUTHORITY

Approved and authorized on behalf of each Party by:

NATIONAL AERONAUTICS AND SPACE
ADMINISTRATION
AMES RESEARCH CENTER

NAVAL INFORMATION WARFARE
CENTER PACIFIC

BY: _____

Dr. Rupak Biswas
Director of Exploration Technology

BY: _____

W. R. BONWIT
NIWC Pacific Executive Director

DATE: _____

DATE: _____